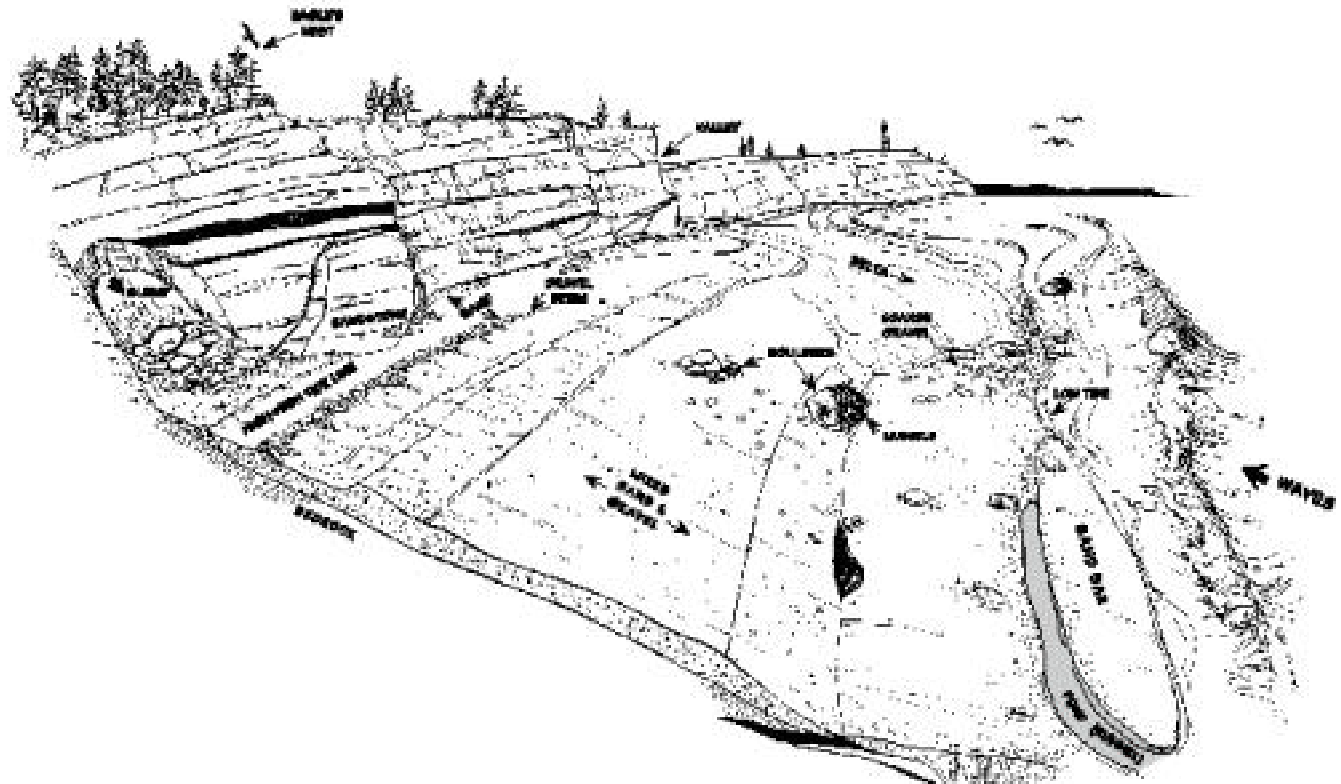


INTERTIDAL

Mixed Sand and Gravel Beaches



Description

- Because of the mixed sediment sizes on these moderately sloping beaches, there may be zones of pure sand, pebbles, or cobbles.
- There can be large-scale changes in the sediment distribution patterns depending upon season, because of the transport of the sand fraction offshore during storms.
- Desiccation and sediment mobility on exposed beaches cause low densities of attached animals and plants.
- The presence of attached algae, mussels, and barnacles indicates beaches that are relatively sheltered, with the more stable substrate supporting a richer biota.

Predicted Oil Behavior

- During small spills, oil will be deposited along and above the high-tide swash.
- Large spills will spread across the entire intertidal area.
- Oil penetration into the beach sediments may be up to 50 cm; however, the sand fraction can be quite mobile, and oil behavior is much like on a sand beach if the sand fraction exceeds about 40 percent.
- Burial of oil may be deep at and above the high-tide line, where oil tends to persist, particularly where beaches are only intermittently exposed to waves.
- In sheltered pockets on the beach, pavements of asphalted sediments can form if oil accumulations are not removed, because most of the oil remains on the surface.

Response Considerations

- Remove heavy accumulations of pooled oil from the upper beachface.
- All oiled debris should be removed; sediment removal should be limited as much as possible.
- Low-pressure flushing can be used to float oil away from the sediments for recovery by skimmers or sorbents. High-pressure spraying should be avoided because of potential for transporting contaminated finer sediments (sand) to the lower intertidal or subtidal zones.
- Mechanical reworking of oiled sediments from the high-tide zone to the upper intertidal zone can be effective in areas regularly exposed to wave activity. However, oiled sediments should not be relocated below the mid-tide zone.
- In-place tilling may be used to reach deeply buried oil layers in the mid-tide zone on exposed beaches.

INTERTIDAL

Mixed Sand and Gravel Beaches

Response Method	Oil Category				
	I	II	III	IV	V
Oil Category Descriptions					
I – Gasoline products					
II – Diesel-like products and light crudes					
III – Medium grade crudes and intermediate products					
IV – Heavy crudes and residual products					
V – Non-floating oil products					
The following categories are used to compare the relative environmental impact of each response method in the specific environment and habitat for each oil type. The codes in each table mean:					
A = The least adverse habitat impact.					
B = Some adverse habitat impact.					
C = Significant adverse habitat impact.					
D = The most adverse habitat impact.					
I = Insufficient information - impact or effectiveness of the method could not be evaluated.					
— = Not applicable.					
Natural Recovery	A	B	B	C	C
Barriers/Berms	C	C	C	B	B
Manual Oil Removal/Cleaning	D	C	B	A	A
Mechanical Oil Removal	D	C	B	B	B
Sorbents	—	A	A	B	B
Vacuum	—	—	B	B	B
Debris Removal	—	A	A	A	A
Sediment Reworking/Tilling	D	B	B	B	B
Vegetation Cutting/Removal	—	C	C	C	C
Flooding (deluge)	A	A	B	C	C
Low-pressure, Ambient Water Flushing	B	A	A	B	C
High-pressure, Ambient Water Flushing	—	—	C	D	D
Low-pressure, Hot Water Flushing	—	—	C	C	C
High-pressure, Hot Water Flushing	—	—	D	D	D
Steam Cleaning	—	—	D	D	D
Sand Blasting	—	—	—	—	—
Solidifiers	—	—	B	—	—
Shoreline Cleaning Agents	—	—	C	C	C
Nutrient Enrichment	—	A	A	B	C
Natural Microbe Seeding	—	I	I	I	I
In-situ Burning	—	—	C	C	C

Consult the *Environmental Considerations for Marine Oil Spill Response* document referenced on page 5 before using this table.